

RE-AMENDED CLAIMS in Serial No. 08/779,495

1. An arrangement comprising:

a frequency-converting central power supply mounted at a first location; the central power supply (i) being powered by ordinary power line voltage provided from an electric utility power line, and (ii) having plural power output ports at each of which is supplied an approximately sinusoidal AC voltage of frequency substantially higher than that of the power line voltage; the central power supply being operative to limit the amount of power extractable from each power output port to a level so low that any passive load connected therewith would not give rise to a fire-initiation hazard; and

plural lighting units; each lighting unit located some distance away from the first location and including: (i) a power input port; (ii) a gas discharge lamp; (iii) a sub-assembly connected in circuit between the gas discharge lamp and the power input port; and (iv) a power supply cord connected between the power input port and one of the power output ports.

2. The arrangement of claim 1 wherein the central power supply is additionally characterized by being operative to limit the amount of power extractable from each power output port to a level not higher than 100 Watt.

3. The arrangement of claim 1 wherein the central power supply is further characterized by including a parallel-resonant LC circuit connected with each power output port.

4. The arrangement of claim 1 wherein each power supply cord has a pair of conductors and is further characterized by having substantially the same capacitance as measured between its pair of conductors.

5. The arrangement of claim 1 wherein the power supply cords may be of different lengths yet exhibit between its conductors substantially the same amount of capacitance.

6. The arrangement of claim 1 wherein: (i) said ordinary power line voltage is provided at a pair of power line conductors disposed within a junction box; and (ii) said first location is defined as being within a distance of six feet from the junction box.

7. The arrangement of claim 1 wherein at least several of the power supply cords are bundled together to form a single cable entity consisting of plural separate pairs of conductors.

8. The arrangement of claim 1 wherein the central power supply is further characterized in that (i) it includes plural frequency-converting power supplies, and (ii) the AC voltage supplied at one of the power output ports is non-synchronous with respect to the AC voltage supplied at another one of the power output ports.

9. The arrangement of claim 8 wherein each of the plural frequency-converting power supplies is further characterized by including a self-oscillating inverter circuit.

21. An arrangement comprising:

a power line source providing a power line voltage at a pair of power line terminals; the power line source being further characterized in that it is functional to provide a current of substantially non-limited magnitude from the power line terminals, thereby causing the amount of power extractable from the power line terminals to be substantially non-limited and therefore to constitute a potential fire-initiation-hazard;

a power conditioner having input terminals connected with the power line terminals; the power conditioner having plural output ports at each of which is provided an approximately sinusoidal AC output voltage of frequency distinctly higher than that of the power line voltage; the power conditioner being further characterized in that each output port is (i) connected with a current-limiting sub-circuit, (ii) functional to supply an output current of frequency equal to that of the AC output voltage, (iii) manifestly prevented from supplying such output current at a magnitude higher than a certain level, thereby not to constitute a fire-initiation-hazard; and

a load assembly characterized by including (i) an input port connected with one of the output ports, (ii) a matching circuit, and (iii) a gas discharge lamp connected with the input port by way of the matching circuit; the load assembly being further characterized by drawing power from said one of the output ports at a near unity power factor, with near unity defined as 0.75 or higher.

22. The arrangement of claim 21 additionally comprising a power supply cord disconnectably connected between said one output port and said input port.

23. The arrangement of claim 21 additionally comprising:

additional load assemblies, each characterized by including (i) an input port connected with one of the output

ports, (ii) a matching circuit, and (iii) a gas discharge lamp connected with the input port by way of the matching circuit; and plural power supply cords; each individual power supply cord being connected between one of the output ports and one of the input ports.

66. A combination comprising:

a ceiling; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an approximately sinusoidal voltage being provided between each pair of power output terminals; the fundamental frequency of the approximately sinusoidal voltage being distinctly higher than that of the AC power line voltage;

luminaires mounted at spaced-apart locations in or near the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said electronic lighting system being further characterized in that each luminaire draws power from its associated pair of power output terminals with a near unity power factor; near unity being defined as 0.75 or higher.

67. A combination comprising:

a ceiling; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an approximately sinusoidal voltage being provided between each pair of power output terminals; the fundamental frequency of the approximately sinusoidal voltage being distinctly higher than that of the AC power line voltage;

luminaires mounted at spaced-apart locations in or near the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said electronic lighting system being further characterized in that the approximately sinusoidal voltage being provided between a given pair of power output terminals is non-synchronous with the sinusoidal voltage provided between another pair of power output terminals.

68. A combination comprising:

a ceiling; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an approximately sinusoidal voltage being provided between each pair of power output terminals; the fundamental frequency of the approximately sinusoidal voltage being distinctly higher than that of the AC power line voltage;

luminaires mounted at spaced-apart locations in or near the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said electronic lighting system being further characterized in that each luminaire includes an energy-storing reactance operative to store more energy than that stored in the capacitive reactance of the pair of power conductors via which it is connected to the power supply.

69. A combination comprising:

a ceiling; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an approximately sinusoidal voltage being provided between each pair of power output terminals; the fundamental frequency of the approximately sinusoidal voltage being distinctly higher than that of the AC power line voltage;

luminaires mounted at spaced-apart locations in or near the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said electronic lighting system being further characterized in that each luminaire includes a gas discharge lamp connected with its associated pair of power input terminals by way of a ballasting transformer defined as including elements functional to cause current drawn by said associated pair of power input terminals, in response to a sinusoidal input voltage provided thereat, to be substantially sinusoidal and in phase with said input voltage.

70. A combination comprising:

a ceiling; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an approximately sinusoidal voltage being provided between each pair of power output terminals; the fundamental frequency of the approximately sinusoidal voltage being distinctly higher than that of the AC power line voltage;

luminaires mounted at spaced-apart locations in or near the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said electronic lighting system being further characterized in that at least some of the pairs of power conductors are bundled together over at least a substantial part of the distance between the power supply and the luminaires associated with said at least some of the pairs of power conductors.

71. A combination comprising:

a ceiling; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an approximately sinusoidal voltage being provided between each pair of power output terminals; the fundamental frequency of the approximately sinusoidal voltage being distinctly higher than that of the AC power line voltage;

luminaires mounted at spaced-apart locations in or near the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals; said electronic lighting system being further characterized in that the power supply includes an inverter having output terminals across which is connected a tank inductor.

72. A combination comprising:

a ceiling; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an approximately sinusoidal voltage being provided between each pair of power output terminals; the fundamental frequency of the approximately sinusoidal voltage being distinctly higher than that of the AC power line voltage;

luminaires mounted at spaced-apart locations in or near the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said ceiling representing the ceiling of a given room;

said luminaires providing substantially all the illumination provided from the ceiling in that room.

73. A combination comprising:

a ceiling; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an approximately sinusoidal voltage being provided between each pair of power output terminals; the fundamental frequency of the approximately sinusoidal voltage being distinctly higher than that of the AC power line voltage;

luminaires mounted at spaced-apart locations in or near the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said luminaires providing most of the illumination provided from the ceiling in a room.

74. A combination comprising:

a ceiling; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an approximately sinusoidal voltage being provided between each pair of power output terminals; the fundamental frequency of the approximately sinusoidal voltage being distinctly higher than that of the AC power line voltage;

luminaires mounted at spaced-apart locations in or near the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals; said luminaires providing most of the ceiling lighting provided in a room.

75. An arrangement comprising:

a ceiling; and

a lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations in or on the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said power supply being disposed at a location distinctly removed from the ceiling.

76. An arrangement comprising:

a ceiling; and

a lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations in or on the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

wherein: (i) said ceiling represents a suspended ceiling of a given room; (ii) no more than a certain number of luminaires are mounted in or on this ceiling; and (iii) the power supply is characterized by being operative to power at least one fourth of all of said certain number of luminaires.

77. An arrangement comprising:

a ceiling; and

a lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations in or on the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said power supply being operative to power all of the luminaires mounted in or on said ceiling.

78. An arrangement comprising:

a ceiling; and

a lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations in or on the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

luminaires mounted at spaced-apart locations in or on the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

said power supply being characterized by including plural individual power supply modules; each individual power supply module having at least two power output ports; each power output port being operative to power one of said luminaires.

79. An arrangement comprising:

a ceiling; and

a lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations in or on the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals;

each of said luminaires including a gas discharge lamp and a circuit assembly connected between the power input terminals and the gas discharge lamp; the circuit assembly being characterized by including an inductive device and a capacitive device.

80. The arrangement of claim 79 wherein said inductive device is parallel-connected with the capacitive device.

81. An arrangement comprising:

a ceiling; and

a lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations in or on the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals; wherein said power supply is further characterized by not being mounted on or in the ceiling.

82. An arrangement comprising:

a ceiling; and

a lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations in or on the ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals; said power supply being characterized by being mounted on or in a wall.

83. An arrangement comprising:

a substantially flat surface; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being further characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations on the substantially flat surface; each luminaire including a gas discharge lamp, a power input port, and a power output port; and

a pair of power conductors connected between each of at least two of said pairs of power output terminals and each of at least two of said power input ports;

wherein the power output port of one of the luminaires is connected with the power input port of another luminaire.

84. An arrangement comprising:

a substantially flat surface; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being further characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations on the substantially flat surface; each luminaire including a gas discharge lamp, a power input port, and a power output port; and

a pair of power conductors connected between each of at least two of said pairs of power output terminals and each of at least two of said power input ports;

wherein the maximum amount of power extractable from each one of said individual pairs of power output terminals is limited such as not to constitute a significant fire initiation hazard.

85. An arrangement comprising:

a substantially flat surface; and

an electronic lighting system characterized by including:

a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being further characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations on the substantially flat surface; each luminaire including a gas discharge lamp, a power input port, and a power output port; and

a pair of power conductors connected between each of at least two of said pairs of power output terminals and each of at least two of said power input ports;

said power supply being further characterized by not being mounted on said substantially flat surface.

86. An arrangement comprising:

a substantially flat surface; and

a lighting system characterized by including a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having at least one pair of central power output terminals; an AC voltage being provided between said at least one pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being further characterized by not being a squarewave voltage;

luminaires mounted at different locations in, on or at the substantially flat surface; each luminaire including a gas discharge lamp, a power input port, and a power output port; and

a pair of power conductors connected between said at least one pair of power output terminals and one of said power input ports;

said power supply being additionally characterized by not being mounted on or at the substantially flat surface.

87. An arrangement comprising:

a substantially flat surface; and

a lighting system characterized by including a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having at least one pair of central power output terminals; an AC voltage being provided between said at least one pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being further characterized by not being a squarewave voltage;

luminaires mounted at different locations in, on or at the substantially flat surface; each luminaire including a gas discharge lamp, a power input port, and a power output port; and

a pair of power conductors connected between said at least one pair of power output terminals and one of said power input ports;

said power supply being further characterized by being mounted on an electrical wall receptacle.

88. An arrangement comprising:

a substantially flat surface; and

a lighting system characterized by including a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having at least one pair of central power output terminals; an AC voltage being provided between said at least one pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being further characterized by not being a squarewave voltage;

luminaires mounted at different locations in, on or at the substantially flat surface; each luminaire including a gas discharge lamp, a power input port, and a power output port; and

a pair of power conductors connected between said at least one pair of power output terminals and one of said power input ports;

said power supply being further characterized by being supported by a wall disposed perpendicularly to said substantially flat surface.

89. An arrangement comprising:

a substantially flat surface; and

a lighting system characterized by including a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having at least one pair of central power output terminals; an AC voltage being provided between said at least one pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being further characterized by not being a squarewave voltage;

luminaires mounted at different locations in, on or at the substantially flat surface; each luminaire including a gas discharge lamp, a power input port, and a power output port; and

a pair of power conductors connected between said at least one pair of power output terminals and one of said power input ports;

each of said luminaires being further characterized by including both an inductive device and a capacitive device.

90. An arrangement comprising:

a substantially flat surface; and

a lighting system characterized by including a power supply connected with the AC power line voltage of an ordinary electric utility power line; the power supply having at least one pair of central power output terminals; an AC voltage being provided between said at least one pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being further characterized by not being a squarewave voltage;

luminaires mounted at different locations in, on or at the substantially flat surface; each luminaire including a gas discharge lamp, a power input port, and a power output port; and

a pair of power conductors connected between said at least one pair of power output terminals and one of said power input ports;

said inductive device being parallel-connected with the capacitive device.

91. An arrangement comprising:

a suspended ceiling in a room; and

a lighting system characterized by including:

a central power supply connected with the AC power line voltage of an ordinary electric utility power line; the central power supply having plural individual pairs of power output terminals; an AC voltage being provided between each pair of power output terminals; the fundamental frequency of the AC voltage being distinctly higher than that of the AC power line voltage; the AC voltage being further characterized by not being a squarewave voltage;

luminaires mounted at spaced-apart locations in or on the suspended ceiling; each luminaire including a pair of power input terminals; and

a pair of power conductors connected between each pair of power output terminals and each pair of power input terminals.

the lighting system being further characterized in that substantially all the luminaires mounted in or on the suspended ceiling are powered from said central power supply;

wherein the maximum amount of power extractable from each one of said individual pairs of power output terminals is limited such as not to constitute a fire initiation hazard.